

FINAL REPORT

VINELAND CHEMICAL SUPERFUND SITE: PHASE V SEDIMENT SAMPLING VINELAND, NEW JERSEY

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LIST OF ABBREVIATIONS, ACRONYMS, AND UNITS

| | |
|------------------|--|
| ADR | Automated Data Review |
| ASTM | American Society for Testing and Materials |
| °C | Degrees Celsius |
| COC | Chain of Custody |
| DESA | Division of Environmental Science and Assessment |
| DGPS | Differential Global Positioning System |
| EA | EA Engineering, Science, and Technology, Inc. |
| EDDs | Electronic Data Deliverables |
| EM | Engineer Manual |
| ft | Foot/Feet |
| HNO ₃ | Nitric acid |
| in | Inch(es) |
| MDL | Method Detection Limit |
| mg/Kg | Milligram(s) Per Kilogram (ppm) |
| mg/L | Milligram(s) Per Liter |
| mL | Milliliter(s) |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NAD83 | North American Datum 1983 |
| NJ | New Jersey |
| ND | Non-detect |
| ppb | Part(s) Per Billion (µg/kg or µg/L) |
| ppm | Part(s) Per Million (mg/Kg or mg/L) |
| ppt | Part(s) Per Thousand (g/kg or g/L) |
| QA | Quality Assurance |
| QC | Quality Control |
| RL | Reporting Limit |
| ROD | Record of Decision |
| SOP | Standard Operating Procedure |
| µg/L | Microgram(s) Per Liter (ppb) |
| µm | Micrometer(s) |

USACE U.S. Army Corps of Engineers
USEPA U.S. Environmental Protection Agency

1. INTRODUCTION

This December 2010 Phase V data report presents arsenic concentrations in sediment and soils from the Maurice River downstream from the Vineland Chemical Company Superfund Site in Cumberland County, New Jersey (NJ). The Phase V sediment and soil sampling was conducted at 66 locations from 12 through 14 April 2010. These data will be used to document the instream and shoreline arsenic concentrations along an 800 ft length of the Maurice River that has been impacted by previous operations at the site. Results for soils and sediments will be compared to the Site Clean-up Level of 20 parts per million (ppm or mg/Kg).

1.1 PROJECT BACKGROUND

Previous studies have shown that the Vineland Chemical Company Superfund Site (site) has affected arsenic contamination in the soils, sediments, and ground water. The site manufactured arsenic-based herbicides from 1950 to 1994 on a 54-acre site in a residential and industrial area of the City of Vineland, NJ. The site is located adjacent and upstream from nearby waterways that include the Blackwater Branch, Maurice River, and Union Lake (Figure 1-1). The soil, sediment, and water of these waterbodies have been impacted by the operations of the site. Beginning in 1982, and in response to State actions, the Vineland Chemical Company instituted some cleanup actions and modified the production process. The site clean-up is being addressed in two stages, including immediate actions and long-term remedial phases. Four long-term, remedial phases focus on source control, migration management, and cleanup of the rivers and Union Lake sediments, which was the subject of a Record of Decision (ROD) in 1989 (USEPA 1989). The current phase of remediation at the site involves removing the contaminated soils/sediments of the Blackwater Branch and the floodplain west of Mill Road to west of the Maurice River Parkway. Future remediation efforts will focus further downstream on the Blackwater Branch and into the Maurice River below the confluence.

1.2 PROJECT LOCATION

The Vineland Chemical site is a 54-acre manufacturing facility located in Vineland, Cumberland County, NJ (Figure 1-1). The site is located in south-central NJ, approximately 40 miles from Wilmington, Delaware and approximately 35 miles from Atlantic City, NJ. The facility was involved in the production of arsenical herbicides, fungicides, and biocides since 1949. Arsenical feedstock compounds were historically stored in unprotected piles. This resulted in soil and groundwater contamination in the vicinity of the site. Runoff during storm events and the recharge of arsenic-bearing groundwater has contaminated the adjacent watershed, including nearby waterways such as Blackwater Branch, Maurice River, and Union Lake.

Phase V sediment and soil sampling was conducted at 66 locations in the Maurice River approximately 1.1 miles downstream from the Vineland Chemical site (Figure 1-2).

1.3 PROJECT PURPOSE AND OBJECTIVES

Determination of arsenic concentrations in the Phase V sediment and soil is necessary in order to provide information about environmental conditions at the site and to assist with the design of future remediation initiatives.

The sediment sampling program consisted of the following tasks:

- Sediment and soil sample collection at 66 locations (23 locations within in the Maurice River and 43 locations along the shoreline of the Maurice River);
- Analysis of arsenic in soil and sediment samples at two depth intervals (0-6 inches below sediment and soil surface and 6-12 inches below sediment and soil surface).
- Data report preparation and submittal.

1.4 EXPERIMENTAL DESIGN

The executing agency for this project is the U.S. Army Corps of Engineers (USACE), North Atlantic Division, Philadelphia District. This investigation was designed to identify, analyze, and evaluate the arsenic concentrations in sediments and soils collected at 66 locations along the Maurice River, located downstream from the site. EA Engineering, Science, and Technology, Inc. (EA) was contracted by the USACE - Philadelphia District to conduct sediment and soil sampling along a section of the Maurice River. Arsenic concentrations in each of the samples were measured by the USEPA Region II Laboratory located in Edison, NJ. The *Uniform Federal Policy/Quality Assurance Project Plan (UFP/QAPP)* (USACE 2009) described the sampling and data-gathering methods utilized for the project and followed guidance provided by the USACE Engineer Manual (EM) 200-1-3 *Requirements for Preparation of Sampling and Analysis Plans* (2001).

1.5 REPORT ORGANIZATION

This report contains a summary of field activities and the results of the sediment and soil analyses. Field sampling techniques and analytical methodologies for arsenic analyses are provided in Chapter 2 and results of the arsenic analyses are provided in Chapter 3. References cited are provided in Chapter 4. Appendix A presents the analytical results, accompanying Chain-of-Custody (COC) forms, and a copy of the field logbook.

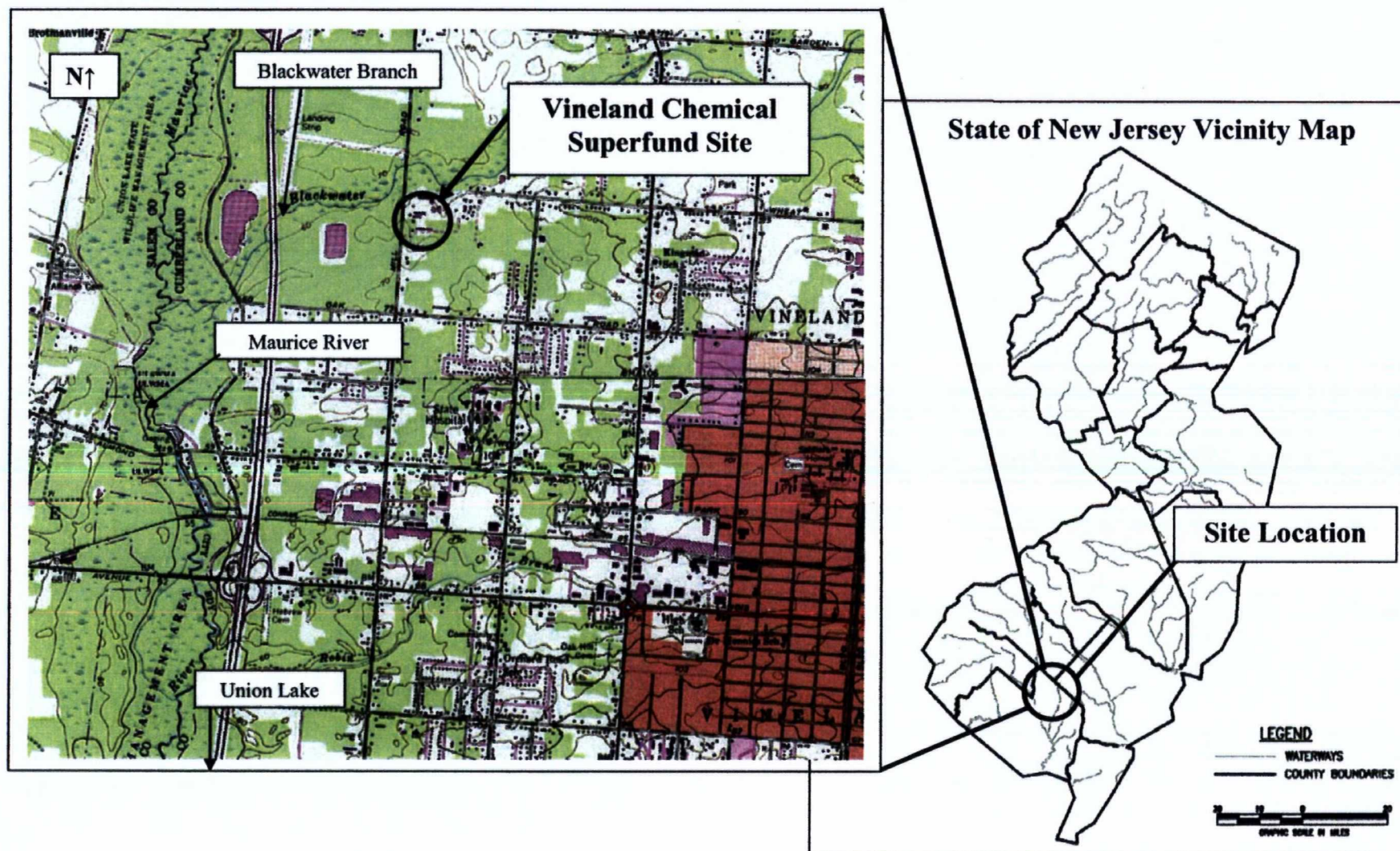
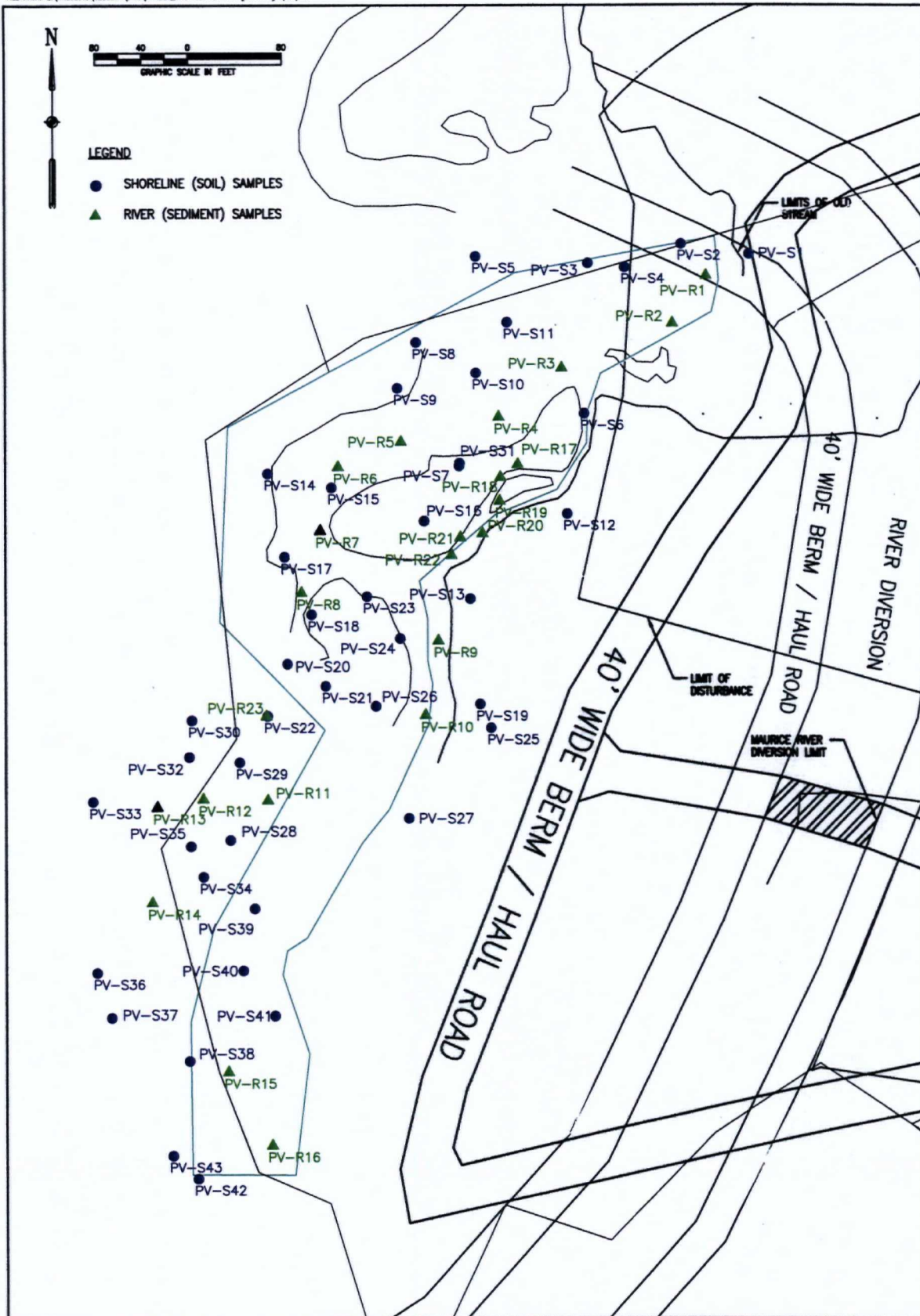


Figure 1-1. Vineland Chemical Superfund Site Location Map, Cumberland County, NJ



EA EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY

VINELAND CHEMICAL
SUPERFUND SITE
VINELAND, NJ

MAURICE RIVER
PHASE V SAMPLE LOCATIONS

| DESIGNED BY | DRAWN BY | CHECKED BY | PROJECT MGR. | DATE | PROJECT NO. | DRAWING NO. | FIGURE |
|-------------|----------|------------|--------------|------|-------------|-------------|--------|
| - | - | - | - | - | - | JAP | 1-2 |

2. METHODOLOGY

Phase V sediment and soil sampling was conducted in accordance with the *Uniform Federal Policy/Quality Assurance Project Plan (UFP/QAPP)* (USACE 2009). Collection of the sediment and soil samples was completed on 12, 13, and 14 April 2010.

2.1 SAMPLING OBJECTIVES

Sixty-six (66) locations were sampled for sediment and soil collection. Of the 66 locations, 23 sediment samples were collected in mid-channel (instream) sections of the Maurice River. The remaining 43 soil samples were collected on the shoreline and banks of the Maurice River. The study area encompassed an approximate 800 ft length of the Maurice River downstream from the confluence with the Blackwater Branch and the Vineland Chemical site. Target sample recovery was 1 ft below sediment and soil surface; sediment and soil collected was sub-sectioned to produce two depth interval samples (0-6 inches below sediment and soil surface and 6-12 inches below sediment and soil surface).

2.2 SAMPLING LOCATION DETERMINATION

Sampling locations were provided by USACE-Philadelphia District. Figure 1-2 shows the sample locations along the Maurice River; sample location coordinates and water depths are provided in Table 2-1. Sample coordinates were recorded in the field using a Trimble GeoXT differential global positioning system (DGPS); the GeoXT uses the WAAS (Wide Area Augmentation System) to obtain accuracies of +/- 5 ft. Coordinates were recorded for each sample location in the field logbook.

2.3 SAMPLE VOLUME REQUIREMENTS

Arsenic analysis of sediments and soils required 250 grams of sediment per sample.

2.4 SAMPLE COLLECTION, STORAGE, AND TRANSPORT

During sample collection, sediment and soil cores were kept on ice and maintained at 4⁰ Celsius in insulated coolers. Upon completion of sample collection and sample processing, samples were shipped via overnight delivery to the USEPA Region II, Division of Environmental Science and Assessment (DESA) Laboratory in Edison, NJ for arsenic analyses. Samples were shipped on ice and maintained at 4⁰ Celsius. Chain-of-Custody (COC) forms accompanied the samples and documented the dates and times of sample collections for arsenic analyses are included in Appendix A. Samples were received at the DESA laboratory on 17 April 2010 and were booked and logged through the Field and Analytical Services Teaming Advisory Committee (FASTAC) process.

2.4.1 Sediment and Soil Sample Collection

Sediment and soil samples were collected at 66 locations using hand-coring techniques. Sampling in the river was conducted from a jon boat; shoreline (soil) samples were taken on the edges of the river approximately 5 ft to 20 ft inland from the river bank. Samples were collected and retained within 2 ft lengths of cellulose acetate butyrate (CAB) liner with an outer diameter of 2 inches. Sediment collected in the river was obtained using a Wildco hand-corer. For each river and instream sample, a liner was placed in the hand-corer with a core catcher placed on the end of the liner. A nose cone was fitted to the outside of the hand-corer. The sample was taken by either pushing or manually driving (with a small sledge hammer) the hand-corer into the sediment until refusal. The sampler was brought back on-board the boat and the core liner was removed, capped, and labeled.

Shoreline (soil) samples were taken by manually driving a 2 ft length of CAB liner into the soil until refusal. The liner was then removed from the soil, capped, and labeled.

Sediment and soil cores were kept on ice and maintained at 4⁰ Celsius in insulated coolers during sampling. Upon completion of sampling, the cores were transported to EA's warehouse facility in Cockeysville, Maryland, for processing. Samples for analytical testing were produced by homogenizing sediment and soil for each depth interval (at each discrete location) in a decontaminated stainless-steel bowl and transferring material to a 4 ounce glass jar.

2.4.2 Field Duplicates

Field duplicates are used as measures of matrix homogeneity and sampling precision. Field duplicate samples were collected simultaneously from the same sampling locations as sediment and soil samples (Table 2-2) and were collected at a rate of 15% per sample matrix. For the Phase V sampling, a total of ten duplicate samples were collected as individual co-located samples and were homogenized and analyzed separately.

2.4.3 Matrix Spike / Matrix Spike Duplicate Samples

A matrix spike (MS) is a field sample to which a known amount of analyte is added before sample preparation and analysis to evaluate the potential effects of matrix interference. Analyte concentrations in the spiked and unspiked sample are used to calculate percent recovery as a measure of matrix interference. A matrix spike duplicate (MSD) is a duplicate of the MS sample. MS/MSD samples were collected at a target rate of 10% per sample matrix. Eight sets of MS/MSD for sediment and soil samples were collected for the project (Table 2-2) for an actual frequency of 12%.

2.5 EQUIPMENT DECONTAMINATION PROCEDURES

Equipment that came into direct contact with sediment and beach soil during sampling was decontaminated prior to deployment in the field to minimize cross-contamination. This included the stainless-steel Ponar, stainless steel spoons, and processing equipment (spoons, knives,

bowls, extruder, etc.). While performing the decontamination procedure, phthalate-free nitrile gloves were used to prevent phthalate contamination of the sampling equipment or the samples.

The decontamination procedure is described below:

- Rinse equipment using site water
- Rinse with distilled or de-ionized water
- Rinse with 1 percent nitric acid (HNO₃)
- Rinse with distilled or de-ionized water

Waste liquids were contained during decontamination procedures and transferred to EA's facility in Sparks, Maryland, for disposal.

2.6 SAMPLE CHAIN-OF-CUSTODY AND DOCUMENTATION

2.6.1 Field Logbook

Field notes were recorded in a permanently bound, dedicated field logbook. A log of sampling activities and station locations were recorded in the log in indelible ink. Personnel names, local weather conditions, and other applicable field sampling program information were also recorded.

Sample location coordinates, approximate water depth, and weather conditions at each sampling location were recorded. Information was recorded in indelible ink. Copies of the project logbook are provided in Appendix A.

2.6.2 Sample Identification

A sample numbering system was utilized for the sediment and soil samples for Phase V sampling. The sample numbering system provided communication between the sample processing operation and the laboratory performing the desired analyses. Sediment and soil samples were identified by site name, sample type, and date of collection. The following sample identification scheme was used:

PV-R1-A or B
PV-S1-A or B

where PV indicated Phase V project, R denoted river sediment samples, S denoted shoreline (soil) samples, and the number after R or S indicated site location. The letter A was used for sample taken from the top 0 inches to 6 inches, and B for sample taken from the bottom 6 inches to 12 inches.

Field Duplicate water and sediment samples were submitted to the laboratory as blind duplicates. The site name and collection date were not designated as part of the sample identifier. Duplicate

samples were designated with an identifier (i.e., PV-DUP) and number (i.e., 1, 2, 3, etc.). For example, DUP-1 was designated as the first duplicate sample collected from a random station. DUP-2 was then designated as the next (or second) duplicate sample collected from a separate random station. Locations where duplicate samples were collected and the corresponding sample ID were recorded in the field logbook for future cross-referencing with sample laboratory results. The cross-referenced sampling locations for the field duplicates are included in Table 2-2.

MS/MSD sediment, soil, and water samples were designated with identifiers added after the site name and sample type. For example, PV-R10-MS indicated a matrix spike sediment sample from sample PV-R10. The following descriptors were used for matrix spike and matrix spike duplicate samples:

- MS – matrix spike sample
- MSD – matrix spike duplicate

2.6.3 Sample Documentation

2.6.3.1 Sample Labels

Both the individual sediment cores and the processed sediment were labeled. Sample containers for the processed sediment and water samples were labeled with the following information:

- Client name
- Project number
- Sample ID
- Station location
- Date and time of collection
- Sampler's initials
- Type of analyses required

2.6.3.2 Chain-of-Custody Records

Sediment and soil samples collected in the field and at EA's processing facility were documented on a COC form. This COC accompanied the samples to the analytical laboratory. The COC indicated the date and time of sample collection and was signed by appropriate personnel. Copies of the COCs that accompanied the analytical testing for arsenic are provided in Appendix A.

2.6.4 Documentation Procedures

Documentation was initialed by the author and dated. Corrections to documentation were made with a single line through the error with the author's initials and date.

2.7 ANALYTICAL METHODS

Analytical testing for arsenic was conducted by the USEPA Region II DESA Laboratory Branch located in Edison, NJ.

2.7.1 Analytical Methods, Laboratory Quality Control, and Detection Limits

Samples obtained during the Phase V sampling were analyzed for total arsenic using extraction procedure DESA SOP C-116 and analysis procedure DESA SOP C-109. The target detection limits (TDL)/screening values and laboratory reporting limits (RL) for arsenic in the sediment and soil were as follows:

| Matrix | Target Detection Limit (TDL) / Screening Value for Arsenic | Laboratory Reporting Limit (RL) for Arsenic | Extraction/Analysis Procedure |
|--------|--|---|-------------------------------|
| Solid | 20 ppm (Site Clean-up Level)* | 0.73 to 0.8 mg/Kg (ppm) | DESA SOP C-116 and SOP C-109 |

**The Site Clean-up Level of 20 ppm is based upon the New Jersey Residential Clean-up Standard for Arsenic.*

2.7.2 Data Validation and Electronic Data Deliverables

Data validation was conducted by the USEPA Region II DESA laboratory for the arsenic analyses. A data quality and usability statement was not provided by DESA for the analytical results. Data are usable for the intended purpose except where noted by the USEPA data validation qualifiers.

TABLE 2-1. SEDIMENT AND SOIL LOCATION INFORMATION

Phase V Sediment Sampling, Vineland, New Jersey (April 2010)

| Location ID | Date | Time | Northing (ft) | Easting (ft) | Water Depth (ft) | Sediment and Soil Recovery Depth (in) |
|-------------|-----------|------|--------------------|--------------|------------------|---------------------------------------|
| | | | New Jersey, NAD 83 | | | |
| PV-R1 | 4/12/2010 | 1145 | 245112 | 329354 | 4.0 | 8.0 |
| PV-R2 | 4/12/2010 | 1255 | 245071 | 329325 | 5.6 | 3.0 |
| PV-R3 | 4/12/2010 | 1309 | 245033 | 329230 | 2.9 | 8.0 |
| PV-R4 | 4/12/2010 | 1324 | 244992 | 329176 | 5.0 | 2.0 |
| PV-R5 | 4/12/2010 | 1344 | 244971 | 329092 | 4.8 | 8.0 |
| PV-R6 | 4/12/2010 | 1419 | 244950 | 329038 | 5.2 | 7.8 |
| PV-R7 | 4/12/2010 | 1431 | 244896 | 329023 | 4.8 | 2.5 |
| PV-R8 | 4/12/2010 | 1452 | 244845 | 329006 | 4.8 | 3.0 |
| PV-R9 | 4/12/2010 | 1505 | 244804 | 329124 | 5.0 | 4.0 |
| PV-R10 | 4/12/2010 | 1603 | 244742 | 329113 | 4.7 | 17.0 |
| PV-R11 | 4/12/2010 | 1625 | 244670 | 328977 | 4.8 | 17.0 |
| PV-R12 | 4/12/2010 | 1641 | 244671 | 328922 | 5.7 | 3.0 |
| PV-R13 | 4/12/2010 | 1653 | 244665 | 328883 | 5.3 | 5.0 |
| PV-R14 | 4/12/2010 | 1708 | 244584 | 328878 | 3.2 | 7.5 |
| PV-R15 | 4/12/2010 | 1724 | 244442 | 328943 | 4.2 | 8.6 |
| PV-R16 | 4/12/2010 | 1738 | 244380 | 328980 | 6.3 | 12.0 |
| PV-R17 | 4/13/2010 | 1109 | 244952 | 329193 | 4.4 | 5.5 |
| PV-R18 | 4/13/2010 | 1119 | 244941 | 329178 | 3.4 | 9.5 |
| PV-R19 | 4/13/2010 | 1130 | 244921 | 329177 | 2.0 | 12.5 |
| PV-R20 | 4/13/2010 | 1145 | 244894 | 329162 | 1.7 | 4.0 |
| PV-R21 | 4/13/2010 | 1157 | 244890 | 329144 | 3.6 | 6.0 |
| PV-R22 | 4/13/2010 | 1216 | 244876 | 329136 | 5.0 | 15.0 |
| PV-R23 | 4/14/2010 | 0901 | 244741 | 328976 | 2.1 | 3.2 |
| | | | | | | |
| PV-S1 | 4/13/2010 | 0745 | 245130 | 329391 | 1.3 | 7.0 |
| PV-S2 | 4/13/2010 | 0757 | 245139 | 329333 | 1.7 | 8.0 |
| PV-S3 | 4/13/2010 | 0813 | 245123 | 329253 | 1.6 | 6.0 |
| PV-S4 | 4/13/2010 | 0825 | 245119 | 329284 | 1.3 | 10.0 |
| PV-S5 | 4/13/2010 | 0843 | 245128 | 329157 | 0.9 | 13.8 |
| PV-S6 | 4/13/2010 | 0909 | 244995 | 329250 | 1.8 | 6.0 |
| PV-S7 | 4/13/2010 | 0940 | 244951 | 329143 | 0.8 | 10.0 |
| PV-S8 | 4/13/2010 | 0957 | 245055 | 329106 | 1.6 | 5.0 |
| PV-S9 | 4/13/2010 | 1007 | 245016 | 329089 | 1.7 | 10.0 |
| PV-S10 | 4/13/2010 | 1015 | 245029 | 329157 | 1.5 | 6.0 |
| PV-S11 | 4/13/2010 | 1033 | 245072 | 329184 | 2.0 | 13.5 |
| PV-S12 | 4/13/2010 | 1054 | 244910 | 329235 | 1.5 | 6.5 |
| PV-S13 | 4/13/2010 | 1244 | 244840 | 329152 | 0.9 | 7.0 |
| PV-S14 | 4/13/2010 | 1254 | 244944 | 328977 | 1.8 | 11.8 |
| PV-S15 | 4/13/2010 | 1310 | 244933 | 329033 | 2.3 | 10.5 |
| PV-S16 | 4/13/2010 | 1326 | 244904 | 329112 | 1.6 | 3.5 |
| PV-S17 | 4/13/2010 | 1346 | 244875 | 328992 | 1.1 | 8.5 |
| PV-S18 | 4/13/2010 | 1412 | 244826 | 329015 | 1.1 | 8.0 |
| PV-S19 | 4/13/2010 | 1428 | 2447251 | 329160 | 1.4 | 4.5 |

TABLE 2-1 (continued)

| Location ID | Date | Time | Northing (ft) | Easting (ft) | Water Depth (ft) | Recovery Depth (in) |
|-------------|-----------|------|--------------------|--------------|---------------------|------------------------|
| | | | New Jersey, NAD 83 | | | |
| PV-S20 | 4/14/2010 | 0829 | 244785 | 328994 | 0.6 | 13.5 |
| PV-S21 | 4/14/2010 | 0843 | 244766 | 329027 | 1.1 | 9.3 |
| PV-S22 | 4/14/2010 | 0901 | 244741 | 328977 | 2.1 | 13.2 |
| PV-S23 | 4/14/2010 | 0930 | 244841 | 329063 | 2.0 | 9.8 |
| PV-S24 | 4/14/2010 | 0939 | 244806 | 329092 | 2.0 | 10.0 |
| PV-S25 | 4/14/2010 | 0957 | 244731 | 329169 | 1.1 | 7.0 |
| PV-S26 | 4/14/2010 | 1011 | 244749 | 329071 | 1.2 | 13.0 |
| PV-S27 | 4/14/2010 | 1033 | 244655 | 329099 | 1.0 | 9.0 |
| PV-S28 | 4/14/2010 | 1050 | 244637 | 328945 | 0.5 | 11.0 |
| PV-S29 | 4/14/2010 | 1113 | 244702 | 328953 | 1.6 | 10.3 |
| PV-S30 | 4/14/2010 | 1127 | 244738 | 328912 | 1.3 | 5.3 |
| PV-S31 | 4/14/2010 | 1148 | 244953 | 329143 | 0.7 | 4.0 |
| PV-S32 | 4/14/2010 | 1208 | 244707 | 323910 | 1.6 | 3.0 |
| PV-S33 | 4/14/2010 | 1241 | 244669 | 328828 | 1.1 | 8.0 |
| PV-S34 | 4/14/2010 | 1251 | 244606 | 328922 | 1.1 | 9.5 |
| PV-S35 | 4/14/2010 | 1300 | 244632 | 328911 | 0.8 | 7.0 |
| PV-S36 | 4/14/2010 | 1314 | 244526 | 328831 | 0.1 | 6.0 |
| PV-S37 | 4/14/2010 | 1324 | 244488 | 328843 | 0.0 | 8.5 |
| PV-S38 | 4/14/2010 | 1336 | 244452 | 328910 | 0.8 | 7.5 |
| PV-S39 | 4/14/2010 | 1350 | 244579 | 328966 | 1.2 | 7.0 |
| PV-S40 | 4/14/2010 | 1358 | 244527 | 328956 | 1.1 | 10.0 |
| PV-S41 | 4/14/2010 | 1413 | 244489 | 328983 | 1.5 | 7.0 |
| PV-S42 | 4/14/2010 | 1432 | 244352 | 328917 | 0.6 | 3.5 |
| PV-S43 | 4/14/2010 | 1438 | 244372 | 328895 | 1.5 | 8.0 |

**TABLE 2-2. PHASE V SAMPLING - DUPLICATE AND MATRIX SPIKE/MATRIX
SPIKE DUPLICATE SAMPLES**

| Duplicate Number | Sample ID |
|-------------------------|------------------|
| PV-DUP1 | PV-S29-A |
| PV-DUP2 | PV-S40-B |
| PV-DUP3 | PV-S37-A |
| PV-DUP4 | PV-S20-A |
| PV-DUP5 | PV-S4-B |
| PV-DUP6 | PV-S27-A |
| PV-DUP7 | PV-S36-A |
| PV-DUP8 | PV-R22-A |
| PV-DUP9 | PV-S5-B |
| PV-DUP10 | PV-R11-B |

| MS/MSD Sample IDs |
|--------------------------|
| PV-S40-A-MS/MSD |
| PV-S28-A-MS/MSD |
| PV-S20-B-MS/MSD |
| PV-S27-B-MS/MSD |
| PV-S36-A-MS/MSD |
| PV-R22-B-MS/MSD |
| PV-R10-B-MS/MSD |
| PV-R11-A-MS/MSD |

3. RESULTS

Results of sediment and soil sampling for Phase V are presented in Tables 3-1 and 3-2 and Figures 3-1 and 3-2. The following sections discuss the arsenic results for sediment and soil samples.

3.1 SEDIMENT (River)

Twenty-three (23) locations were sampled in the Maurice River. Upon completion of sampling and core processing, 31 sediment samples were submitted for arsenic analysis (Tables 3-1 and 3-2). Twenty-three sediment samples represented 0 inches to 6 inches below sediment surface depth intervals (Table 3-1 and Figure 3-1) and 8 sediment samples represented 6 inches to 12 inches below sediment surface depth interval (Table 3-2 and Figure 3-2).

Table 3-1 lists the sediment sample arsenic concentrations for 0 inches to 6 inches below sediment surface depth interval; Figure 3-1 depicts the results for the same depth interval. Seventeen (17) sediment samples from 0 inches to 6 inches had detected concentrations of arsenic (77.3%). Detected arsenic concentrations ranged from 0.91 mg/Kg to 500 mg/Kg. Two sediment samples (9.1%) exceeded the Site Clean-up Level. The two samples that exceeded 20 ppm were at location PV-R19 and PV-R20 (Table 3-1 and Figure 3-1). Sample PV-R19-A had an arsenic concentration of 64 mg/Kg which exceeded the Site Clean-up Level by a factor of 3.2. Sample PV-R20-A had an arsenic concentration of 500 mg/Kg which exceeded the Site Clean-up Level by a factor of 25.

Table 3-2 lists the sediment sample arsenic concentrations for 6 inches to 12 inches below sediment surface depth interval; Figure 3-2 depicts the results for the same depth interval. Sediments in the Maurice River were comprised mostly of medium-to-coarse sands thus resulting in sediment core recoveries that were less than 12 inches. Five of 8 (62.5%) sediment samples from the 6 inches to 12 inches depth interval had detected concentrations of arsenic. Concentrations of detected arsenic ranged from 1.5 mg/Kg to 28 mg/Kg. One sample, PV-R3-B, of 8 (12.5%) exceeded the Site Clean-up Level of 20 ppm with an arsenic concentration of 28; this exceeded the Site Clean-up Level by a factor of 1.4.

3.2 SOIL (Shoreline)

Forty-three (43) locations were sampled along the shoreline of the Maurice River. Sixty-four soil samples taken along the shorelines of the Maurice River were submitted for analysis. Of the 64 samples submitted, 43 soil samples represented 0 inches to 6 inches below soil surface (Table 3-1 and Figure 3-1) and 21 soil samples represented 6 inches to 12 inches below soil surface (Table 3-2 and Figure 3-2).

For the 0 inches to 6 inches depth interval (Table 3-1 and Figure 3-1), 39 of the soil samples had detected concentrations of arsenic (90.7%) and 23 soil samples (53.5%) exceeded the Site Clean-up Level. Detected arsenic concentrations in the soil samples ranged from 1.9 mg/Kg to 820 mg/Kg. Arsenic concentrations in samples exceeding the Site Clean-up Level ranged from 21 mg/Kg to 820 mg/Kg.

Twenty-one (21) soil samples taken from 6 inches to 12 inches below the soil surface were submitted for arsenic analysis (Table 3-2 and Figure 3-2). Arsenic was detected in 13 samples (61.9%) with concentrations ranging from 2.6 mg/Kg to 400 mg/Kg. Four soil samples exceeded the Site Clean-up Level (19%) with concentrations ranging from 61 mg/Kg to 400 mg/Kg.

3.3 QA/QC RESULTS

The results for the QA/QC samples, including field duplicates and matrix spike and matrix spike duplicates, are provided in Table 3-3 and are discussed in the following subsections.

3.3.1 Field Duplicates

Field duplicate samples were collected simultaneously from the same sampling locations as sediment and soil samples.

Relative percent differences (RPD) were calculated for field duplicate samples that had detected concentrations of arsenic. Following the protocol defined in Worksheet 12 of the *UFP/QAPP* (USACE 2009), the RPD was calculated for PV-DUP1, -DUP2, -DUP3, -DUP4, -DUP6, and DUP10. RPDs were not calculated for duplicates and co-located samples with non-detect results. According to the *UFP/QAPP* (USACE 2009), the measurement performance criterion for sediment samples and soil samples is 25% RPD (QAPP Worksheets 12-1 and 12-2).

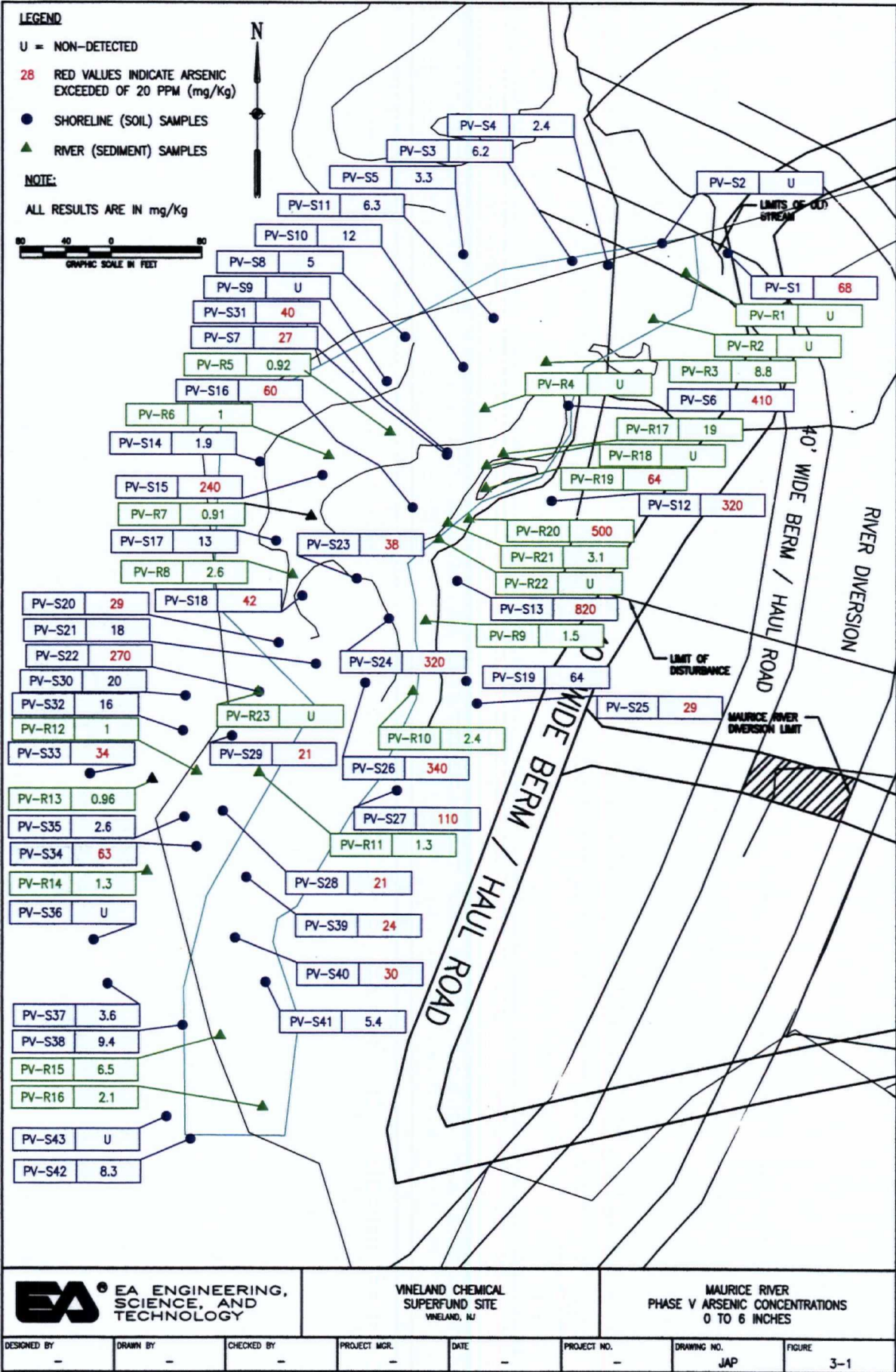
Table 3-3 lists the RPD results for duplicate samples with detected concentrations of arsenic. The RPDs for PV-DUP2 and PV-DUP3 were in compliance (less than 25%). The RPDs for PV-DUP1, -DUP4, -DUP6, and -DUP10 were greater than 25%. The difference in arsenic concentrations between these duplicates and their respective samples may be due to the heterogeneity of the sediments and soils in the Maurice River.

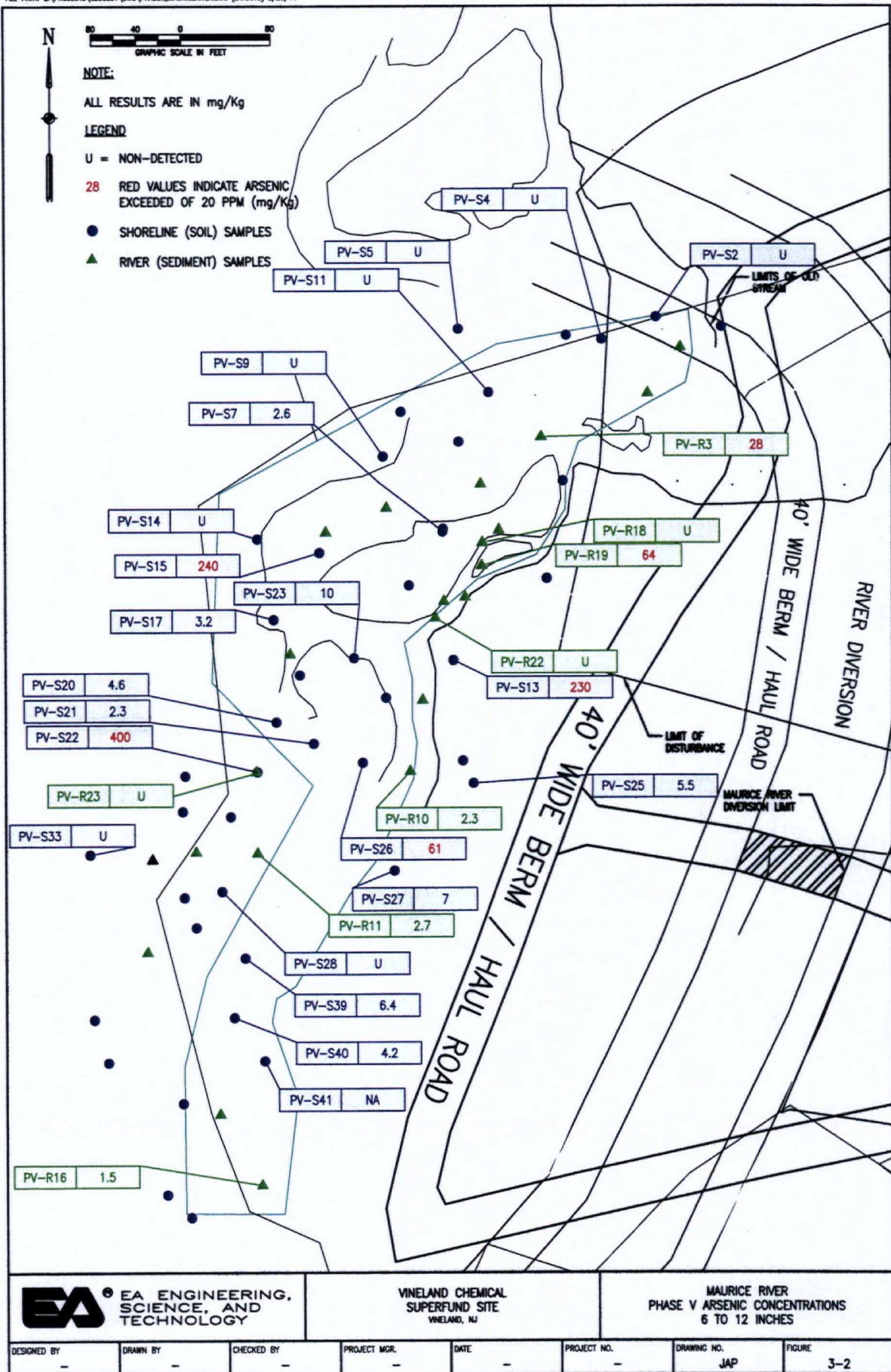
3.3.2 MS/MSD Samples

Results of the MS/MSD samples are presented in Table 3-3. The Laboratory's established QC criteria were met for MS and MSD samples, including sediment and soil samples. These data were validated by the USEPA Region II DESA Laboratory.

3.3.3 Completeness

Completeness is a measure of the amount of usable data obtained during the project compared to the amount that was expected to be obtained (Worksheet #12 in the *UFP/QAPP*). For the Phase V sediment sampling, technical completeness was 100%. All results of arsenic analysis were usable for this sampling effort.





**TABLE 3-1. PHASE V ARSENIC RESULTS - 0 INCHES TO 6 INCHES
DEPTH**

| Sediment (river) samples | | |
|--------------------------|-------|-------------|
| Sample ID | Units | Result |
| PV-R1-A | mg/KG | 0.85 U |
| PV-R2-A | mg/KG | 0.94 U |
| PV-R3-A | mg/KG | 8.8 |
| PV-R4-A | mg/KG | 0.68 U |
| PV-R5-A | mg/KG | 0.92 |
| PV-R6-A | mg/KG | 1 |
| PV-R7-A | mg/KG | 0.91 |
| PV-R8-A | mg/KG | 2.6 |
| PV-R9-A | mg/KG | 1.5 |
| PV-R10-A | mg/KG | 2.4 |
| PV-R11-A | mg/KG | 1.3 |
| PV-R12-A | mg/KG | 1 |
| PV-R13-A | mg/KG | 0.96 |
| PV-R14-A | mg/KG | 1.3 |
| PV-R15-A | mg/KG | 6.5 |
| PV-R16-A | mg/KG | 2.1 |
| PV-R17-A | mg/KG | 19 |
| PV-R18-A | mg/KG | 2.9 U |
| PV-R19-A | mg/KG | |
| PV-R20-A | mg/KG | |
| PV-R21-A | mg/KG | 3.1 |
| PV-R22-A | mg/KG | 1.5 U |
| PV-R23-A | mg/KG | 0.75 U |

| Soil (shoreline) samples | | |
|--------------------------|-------|------------|
| Sample ID | Units | Result |
| PV-S1-A | mg/KG | |
| PV-S2-A | mg/KG | 1.1 U |
| PV-S3-A | mg/KG | 6.2 |
| PV-S4-A | mg/KG | 2.4 |
| PV-S5-A | mg/KG | 3.3 |
| PV-S6-A | mg/KG | |
| PV-S7-A | mg/KG | |
| PV-S8-A | mg/KG | 5 |
| PV-S9-A | mg/KG | 2.1 U |
| PV-S10-A | mg/KG | 12 |
| PV-S11-A | mg/KG | 6.3 |
| PV-S12-A | mg/KG | |
| PV-S13-A | mg/KG | |
| PV-S14-A | mg/KG | 1.9 |
| PV-S15-A | mg/KG | |
| PV-S16-A | mg/KG | |
| PV-S17-A | mg/KG | 13 |
| PV-S18-A | mg/KG | |
| PV-S19-A | mg/KG | |
| PV-S20-A | mg/KG | |
| PV-S21-A | mg/KG | 18 |
| PV-S22-A | mg/KG | |
| PV-S23-A | mg/KG | |
| PV-S24-A | mg/KG | |
| PV-S25-A | mg/KG | |
| PV-S26-A | mg/KG | |
| PV-S27-A | mg/KG | |
| PV-S28-A | mg/KG | |
| PV-S29-A | mg/KG | |
| PV-S30-A | mg/KG | 20 |
| PV-S31-A | mg/KG | |
| PV-S32-A | mg/KG | 16 |
| PV-S33-A | mg/KG | |
| PV-S34-A | mg/KG | |
| PV-S35-A | mg/KG | 2.6 |
| PV-S36-A | mg/KG | 0.77 U |
| PV-S37-A | mg/KG | 3.6 |
| PV-S38-A | mg/KG | 9.4 |
| PV-S39-A | mg/KG | |
| PV-S40-A | mg/KG | |
| PV-S41-A | mg/KG | 5.4 |
| PV-S42-A | mg/KG | 8.3 |
| PV-S43-A | mg/KG | 0.87 U |

NOTE: **Bold** values represent detected arsenic concentrations; shaded values exceed the Site Clean-up Level of 20 mg/Kg (ppm)

U=arsenic was analyzed, but not detected. Average reporting limits are listed next to non-detected sample results.

TABLE 3-2. PHASE V ARSENIC RESULTS - 6 INCHES TO 12 INCHES DEPTH

Sediment (river) samples

| Sample ID | Units | Result |
|-----------|-------|------------|
| PV-R3-B | mg/KG | |
| PV-R10-B | mg/KG | 2.3 |
| PV-R11-B | mg/KG | 2.7 |
| PV-R16-B | mg/KG | 1.5 |
| PV-R18-B | mg/KG | 1.5 U |
| PV-R19-B | mg/KG | 2.3 |
| PV-R22-B | mg/KG | 0.77 U |
| PV-R23-B | mg/KG | 0.81 U |

Soil (shoreline) samples

| Sample ID | Units | Result |
|-----------|-------|--------------------|
| PV-S2-B | mg/KG | 0.93 U |
| PV-S4-B | mg/KG | 1.1 U |
| PV-S5-B | mg/KG | 0.92 U |
| PV-S7-B | mg/KG | 2.6 |
| PV-S9-B | mg/KG | 0.82 U |
| PV-S11-B | mg/KG | 0.99 U |
| PV-S13-B | mg/KG | |
| PV-S14-B | mg/KG | 0.71 U |
| PV-S15-B | mg/KG | |
| PV-S17-B | mg/KG | 3.2 |
| PV-S20-B | mg/KG | 4.6 |
| PV-S21-B | mg/KG | 2.3 |
| PV-S22-B | mg/KG | |
| PV-S23-B | mg/KG | 10 |
| PV-S25-B | mg/KG | 5.5 |
| PV-S26-B | mg/KG | |
| PV-S27-B | mg/KG | 7 |
| PV-S28-B | mg/KG | 0.77 U |
| PV-S33-B | mg/KG | 0.9 U |
| PV-S39-B | mg/KG | 6.4 |
| PV-S40-B | mg/KG | 4.2 |
| PV-S41 | - | No sample recovery |

NOTE: **Bold** values represent detected arsenic concentrations; shaded values exceed the Site Clean-up Level of 20 mg/Kg (ppm)

U=arsenic was analyzed, but not detected. Laboratory reporting limits are listed next to non-detect qualifier.

TABLE 3-3. ARSENIC CONCENTRATIONS (mg/Kg) IN PHASE V SAMPLING - DUPLICATE SAMPLES

| Duplicate Number | Units | Average RL | Duplicate Result | Sample ID | Average RL | Sample Result | RPD (%) |
|------------------|-------|------------|------------------|-----------|------------|---------------|---------|
| PV-DUP1 | mg/Kg | | 14 | PV-S29-A | | | 40.0 |
| PV-DUP2 | mg/Kg | | 4.9 | PV-S40-B | | 4.2 | 15.4 |
| PV-DUP3 | mg/Kg | | 4.2 | PV-S37-A | | 3.6 | 15.4 |
| PV-DUP4 | mg/Kg | | | PV-S20-A | | | 32.0 |
| PV-DUP5 | mg/Kg | 0.97 | U | PV-S4-B | 1.1 | U | NC |
| PV-DUP6 | mg/Kg | | | PV-S27-A | | | 97.3 |
| PV-DUP7 | mg/Kg | | 1.1 | PV-S36-A | 0.77 | U | NC |
| PV-DUP8 | mg/Kg | 1.5 | U | PV-R22-A | 1.5 | U | NC |
| PV-DUP9 | mg/Kg | 0.95 | U | PV-S5-B | 0.92 | U | NC |
| PV-DUP10 | mg/Kg | | 1.8 | PV-R11-B | | 2.7 | 40.0 |

RL=laboratory reporting limit (average)

NOTE: Bold values represent detected arsenic concentrations; shaded values exceed the Site Clean-up Level of 20 mg/Kg (ppm)

U=arsenic was analyzed, but not detected

RPD=relative percent difference (see Section 3.3.1 for description of calculation)

NC=not calculated due to non-detected results

4. REFERENCES

- U.S. Army Corps of Engineers (USACE). 2001. *Requirements for Preparation of Sampling and Analysis Plans*. USACE Engineer Manual. EM 200-1-3. 01 February 2001.
- U.S. Army Corps of Engineers (USACE). 2009. *Draft, Uniform Federal Policy (UFP)/Quality Assurance Project Plan (QAPP) for Vineland Chemical Superfund Site, Operational Unit #3 Blackwater Branch Area – West of Mill Road, Arsenic Delineation Mapping, Monitoring, and Fish Tissue Study*. Prepared for USEPA Region II, New York City, New York, April.
- U.S. Environmental Protection Agency (USEPA). 2001. *Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual*. EPA-823-B-01-002.
- U.S. Environmental Protection Agency (USEPA). 1989. *EPA Superfund Record of Decision: Vineland Chemical Company, Inc.* EPA ID: NJD002385664, OU 01. Vineland NJ. 28 September.

APPENDIX A

**ANALYTICAL RESULTS, CHAIN-OF-
CUSTODY (COC) FORMS FOR
ARSENIC ANALYSES, AND FIELD
DOCUMENTATION (LOGBOOK)**

12 APRIL 2010

VINELAND - Phase V Sediment Sampling

1100 - T. Ward and Adam Kusan

Arrive @ Alliance Beach, unload

equipment

1130 - 1140 - Flag north and south ends
of study area, islands 1, 2a, 2b, and 3

1145 - sample @ PV-R1

N 245111.5 ft NJ NAD83

E 329354.0 ft

Depth = 4.0 ft

Recovery = 0.75 ft tan sand

1255 - PV-R2

329325.4 ft

N 245071.0 ft E 32932

D = 5.6 ft

Rec = 3 inches hard-packed
tan sand

1309 - PV-R3

N 245033.0 E 329230.3

D = 2.9 ft Rec = ~ 8 in. Brown, peat,
tan sand

1324 - PV-R4

N 244991.8 E 329176.4

D = 5.0 ft

Rec = 2 inches coarse sand,
gravel

12 April 2010

1344 - PV-R5

N 244770.9

E 329092.4

D = 4.8 ft

Rec = ~ 8 inches Tan sand

1419 - PV-R6

N 244949.9

E 329038.3

D = 5.2 ft

Rec = 7 3/4 in. Tan sand

1421 PV-R7

N 244896.2

E 329022.8

D = 4.8 ft

Rec = 2.5 in. Gravel / coarse
sand

1452 - PV-R8

N 244849.5

E 329086.4

D = 4.8 ft

Rec = ~ 3 inches gravel,
sand

1505 - PV-R9

N 244804.0

E 329124.2

D = 5.0 ft

Rec = 4 inches gravel, sand

1555 - PV-R10

N 244741.0

E 329113.1

D = 4.7 ft

Rec = 1 ft sand, gravel

12 April 2010

1625 - PV-R11

N 244670.2 E 328977.1

D = 4.8 ft

Rec = 17 in

Sand, gravel

1641 - PV-R12

N 244671.3

E 328921.9

D = 5.2 ft

Rec = 3 in

Hard packed sand

1653 - PV-R13

N 244664.7 E 328882.8

D = 5.3 ft

Rec = 5 in Sand, gravel

1708 - PV-R14

N 244584.3

E 328878.3

D = 3.2 ft

Rec = 7.5 in

Sand
gravel

1724 - PV-R15

N 244442.7

E 328946.4

D = 4.2 ft

Rec = 8.6 inches

N 244442.7

E 328942.9

1738 - PV-R116

N 244380.2

E 328900.2

D = 6.3 ft

Rec =

13 APRIL 2010

VINELAND PHASE V SEDIMENT SAMPLING

ORG - T. WARD & A. KUMAR ARBON

ALLIANCE BEACH, VINLAND

EQUIPMENT

0745 PV-S1

N 245130.0

E 329390.8

D = 1.3 ft

Rec = 7 in. Sandy silt

0757 PV-S2

N 245138.6

E 329332.7

D = 1.7 ft

Rec = 8 in brown sandy silt
w/ roots

0813 PV-S3

N 245122.5

E 329252.8

D = 1.6 ft

Rec = 6 in brown silt
w/ peat and roots

0825 PV-S4

N 245118.9

E 329284.3

D = 1.3 ft

Rec = 10 in sand w/ roots
mats and peat

13 APRIL 2010

0843 PV-S5

N 245128.2 E 329156.9
D = 0.9 ft Rec = 13.8 ft ^{AK} silt w/
sand and root mass

0909 PV-S6

D = 1.8 ft Rec = 6 in silt and peat
N 244944.7 E 329244.5

0940 PV-S7

N 244950.7 E 329142.5
D = 0.8 ft Rec = 10 in silty sand w/
roots

0957 PV-S8

N 245055.1 E 329105.5
D = 1.6 ft Rec = 5 in silt and peat

1007 PV-S9

N 245016.0 E 329087.4
D = 1.7 ft Rec = 10 in roots and silt
w/ white sand at btm

1015 PV-S10

N 245028.9 E 329157.0
D = 1.5 ft Rec = 6 in brown clayey silt

13 APRIL 2010

1033 PV-S11

N 245072.1 E 329183.7
D = 2.0 ft Rec = 13.8 ft ^{AK} silt w/ roots
and sand at bottom

1054 PV-S12

N 244910.2 E 329235.0
D = 1.5 ft Rec = 6.5 ft ^{AK} brown silt
w/ root material

1109 PV-R17

N 244951.86 E 329192.6
D = 4.4 ft Rec = 5.5 in dark tan sand

1119 PV-R18

N 244941.69 E 329177.88
D = 3.4 ft Rec = 9.5 in peat w/
sand

1130 PV-R19

N 244921.0 E 329177.2
D = 2.0 ft Rec = 12.5 in sand w/
root and silt

13 APRIL 2010

1146 PV-R20
N 244893.8 E 329162.4
D = 1.7 ft REC = 4 in peat w/
root mass

1167 PV-R21
N 244890.3 E 329143.6
D = 3.6 ft REC = 6 in tan sand

1216 PV-R22
N 244875.8 E 329135.8
D = 5.0 ft REC = 15 in peat
and silt

1244 PV-S13
N 244889.5 E 329151.8
D = 0.9 ft REC = 7 in silt w/
peat and root wads

1254 PV-S14
N 244944.4 E 328977.4
D = 1.8 REC = 11.8 in silt w/
peat and some sand

13 APRIL 2010

1310 PV-S15
N 244932.5 E 329082.6
D = 2.3 ft REC = 10.5 in silt and
peat

1326 PV-S16
N 244904.2 E 329112.3
D = 1.6 ft REC = 3.5 in peat and
silt

1346 PV-S17
N 244874.5 E 328991.8
D = 1.1 ft REC = 8.5 in clayey silt
w/ root wads

1402 PV-S18
N 244826.2 E 329015.8
D = 1.1 ft REC = 8 in silt and peat

1428 PV-S19
N 244756.0 E 329159.8
D = 1.4 ft REC = 4.5 in silt and peat

14 APRIL 2010

0710^{AL} VINELAND PHASE V SEDIMENT SAMPLE

0710 T. AND AND A. KUMAR ARRIVE @
ALLIANCE BEACH, UNLOAD EQUIPMENT

0829 PV-S20

N 244784.8

E 328994.1

D = 0.6 ft

Rec = 13.5 in brown silt
and peat w/ wood chunks

0848 PV-S21

N 244766.1

E 329027.1

D = 1.1 ft

Rec = 4.3 m brown silt
w/ peat

0901 PV-R23

N 244741.2

E 328976.9

D = 2.1 ft

Rec = 13.2 m silt w/
peat and sand

0930 PV-S22

N 244841.4

E 329063.03

D = 2.0 ft

Rec = 9.8 m brown silt
w/ sand

14 APRIL 2010

0939 PV-S23

N 244806.1

E 329091.6

D = 2.0 ft

Rec = 10 m some peat
w/ tan sand and silt

0957 PV-S24

N 244731.2

E 329169.4

D = 1.1 ft

Rec = 7 in silt w/ little
sand and phragmites

1011 PV-S25

N 244749.3

E 329070.6

D = 1.2 ft

Rec = 13 in brown silt w/
tan sand, some peat

1033 PV-S26

N 244655.0

E 329098.7

D = 1.1 ft

Rec = 9 in brown silt and
peat

1050 PV-S27

N 244636.9

E 328948.0

D = 0.5 ft

Rec = 11 m brown silt and
peat

14 APRIL 2010

1113

PV-S28

N 244702.4

E 328958.0

D = 1.6 ft

REL = 10.3 silt and peat
w/ some ten sand

1127

PV-S29

N 244737.7

E 328912.2

D = 1.3 ft

REL = 5.3 in silt and peat

1148

PV-S30

N 244953.0

E 329142.0

D = 0.7 ft

REL = 4 in silt and sand

1208

PV-S31

N 244706.9

E 328909.9

D = 1.6 ft

REL = 3 in silt and peat

1241

PV-S32

N 244669.4

E 328827.8

D = 1.1 ft

REL = 8.0 in silt and peat

1251

PV-S33

N 244605.9

E 328921.8

D = 1.1 ft

REL = 9.5 in peat and silt
w/ sand and bottom

14 APRIL 2010

1300

PV-S34

N 244631.7

E 328911.3

D = 0.8 ft

REL = 7 in peat and silt

1314

PV-S35

N 244525.6

E 328930.7

D = 0.1 ft

REL = 6 in silt and sand

1324

PV-S36

N 244487.8

E 328843.1

D = 0 ft

REL = 8.6 in silt and 11 in sand

1336

PV-S37

N 244451.8

E 328909.6

D = 0.8 ft

REL = 7.5 in sand and root mats

1350

PV-S38

N 244579.3

E 328965.6

D = 1.2 ft

REL = 7.0 in sand w/ roots
and peat

1358

PV-S39

N 244527.3

E 328955.7

D = 1.1 ft

REL = 10 in sand w/ roots
and peat

14 APRIL 2010

| | | |
|------------|------------------------------------|--|
| 1406 | PV-540 | |
| N 244516.2 | E 328969.1 | |
| D = 1.0 ft | Rec = 11.5m sand w/ roots and peat | |
| 1413 | PV-541 | |
| N 244489.2 | E 328982.7 | |
| D = 1.0 ft | Rec = 7.0 in sand w/ little peat | |
| 1432 | PV-542 | |
| N 244352.3 | E 328946.5 | |
| D = 0.6 ft | Rec = 3.5 in soil w/ peat | |
| 1438 | PV-543 | |
| N 244371.8 | E 328895.2 | |
| D = 1.5 ft | Rec = 8 in peat and sand | |

15 APRIL 2010

VINELAND PHASE V Sediment Processing

Sample ID: Location - A = 0" - 6"
Location - B = 6" - 12"

Sample ID Time

PV-529-A 1035

↳ PV-DUP1 "

PV-526-A 1045

PV-526-B 1046

PV-532-A 1058

PV-539-A 1105

PV-539-B 1106

PV-525-A 1115

PV-525-B 1116

PV-540-A 1130

PV-540-A-MS 1130

PV-540-A-MSD 1130

PV-540-B 1131

↳ PV-DUP2 "

Vineland
15 April 2010 Phase V Sed. Processing

| Sample ID | Time |
|---------------|------|
| PV-S30-A | 1140 |
| PV-S30-A | 1155 |
| PV-S31-A | 1157 |
| PV-S24-A | 1204 |
| PV-S41-A | 1206 |
| PV-S37-A | 1212 |
| ↳ PV-DUP3 " | |
| PV-S42-A | 1215 |
| PV-S28-A | 1222 |
| PV-S28-B | 1223 |
| ↳ PV-S28-A-MS | 1222 |
| PV-S28-A-MSB | 1222 |
| PV-S35-A | 1245 |
| PV-R18-A | 1255 |
| PV-R18-B | 1256 |

Vineland
15 APRIL 2010 Phase V Sed. Processing

| Sample ID | Time |
|---------------------|--------------------|
| PV-S23-A | 1317 |
| PV-S23-B | 1318 |
| PV-S43-A | 1325 |
| PV-S43-B | 1326 TW |
| PV-R1-A | 1330 |
| PV-S23-A | 1340 |
| PV-S23-B | 1341 |
| PV-S16-A | 1345 |
| PV-R19-A | 1355 |
| PV-R19-B | 1356 |
| PV-S20-A | 1405 |
| ↳ PV-S20-A | " |
| PV-S20-B | 1410 |
| PV-S20-B-MS | 1410 |
| PV-S20-B-MSB | 1410 |
| PV-S13-A | 1420 |
| PV-S13-B | 1421 |

15 APRIL 2010 Vineland Phase V Sed. Processing

Sample ID Time

PV-S15-A 1435

PV-S15-B 1436

PV-R7-A 1440

PV-R15-A 1442

PV-R8-A 1446

PV-R16-A 1450

PV-R16-B 1451

PV-S21-A 1505

PV-S21-B 1506

PV-S4-A 1515

PV-S4-B 1516

↳ PV-DUP5 "

PV-R4-A 1522

16 April 2010

Sample ID Time

PV-S22-A 0925

PV-S22-B 0926

PV-S27-A 0935

↳ PV-DUP6

PV-S27-B 0936

PV-S27-B-HS 0936

PV-S27-B-HSD 0936

PV-S33-A 0950

PV-S33-B 0950¹⁵

PV-R21-A 0957

PV-S34-A 1000

PV-S6-A 1009

PV-S3-A 1015

PV-S36-A 1020

↳ PV-DUP7

PV-S36-A-HS 1020

PV-S36-A-HSD 1020

16 APRIL 2010

| Sample ID | Time |
|--------------|------|
| PV-S17-A | 1100 |
| PV-S17-B | 1101 |
| PV-S19-A | 1113 |
| PV-R9-A | 1117 |
| PV-R13-A | 1123 |
| PV-R5-A | 1125 |
| PV-R6-A | 1127 |
| PV-R12-A | 1140 |
| PV-S8-A | 1142 |
| PV-R20-A | 1144 |
| PV-R22-A | 1230 |
| ↳ PV-DUP8 | " |
| PV-R22-B | 1235 |
| PV-R22-B-MS | 1235 |
| PV-R22-B-MSD | 1235 |

16 APRIL 2010

| Sample ID | Time |
|--------------|------|
| PV-R2-A | 1245 |
| PV-R14-A | 1247 |
| PV-R17-A | 1249 |
| PV-S1-A | 1300 |
| PV-S10-A | 1302 |
| PV-S12-A | 1304 |
| PV-S2-A | 1310 |
| PV-S2-B | 1312 |
| PV-S9-A | 1315 |
| PV-S9-B | 1317 |
| PV-S5-A | 1325 |
| PV-S5-B | 1327 |
| ↳ PV-DUP9 | " |
| PV-R10-A | 1335 |
| PV-R10-B | 1337 |
| PV-R10-B-MS | 1337 |
| PV-R10-B-MSD | 1337 |

16 APRIL 2010

| Sample ID | Time |
|-----------|------|
| PV-S11-A | 1342 |
| PV-S11-B | 1344 |

| | |
|---------|------|
| PV-R3-A | 1347 |
| PV-R3-B | 1349 |

| | |
|----------|------|
| PV-S14-A | 1355 |
| PV-S14-B | 1357 |

| | |
|--------------|------|
| PV-R11-A | 1400 |
| PV-R11-A-MS | 1400 |
| PV-R11-A-HSD | 1400 |
| PV-R11-B | 1402 |
| ↳ PV-DUP10 | " |

| | |
|---------|------|
| PV-S7-A | 1408 |
| PV-S7-B | 1410 |

| | |
|----------|------|
| PV-S18-A | 1415 |
|----------|------|

[illegible]

[illegible]

[illegible]

Case Narrative:

Vineland Chemical #10040039

The National Environmental Laboratory Accreditation Conference (NELAC) is a voluntary environmental laboratory accreditation association of State and Federal agencies. NELAC established and promoted a national accreditation program that provides a uniform set of standards for the generation of environmental data that are of known and defensible quality. The EPA Region 2 Laboratory is NELAC accredited. The Laboratory tests that are accredited have met all the requirements established under the NELAC Standards.

Comment(s):

- The contaminant concentrations for all sediment/soil samples are reported on a "dry-weight" basis.
- All field samples designated with a "MS" or "MSD" were treated as environmental samples and reported as such. A separate matrix spike sample is prepared, analyzed and evaluated for each batch of 20 samples; however, the results for this sample, and other QC samples associated with each batch, are not included in the Laboratory report.

Data Qualifier(s):

- U- The analyte was not detected at or above the Reporting Limit.
- J- The identification of the analyte is acceptable; the reported value is an estimate.
- K- The identification of the analyte is acceptable; the reported value may be biased high.
- L- The identification of the analyte is acceptable; the reported value may be biased low.
- NJ- There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification. The reported value is an estimate.

Reporting Limit(s):

The Laboratory was able to achieve the appropriate Reporting Limit for Arsenic as requested.

Method(s):

All methods that are NELAC accredited in the Laboratory are noted with "NELAC" at the end of the method reference.

- TAL Metals Analysis (As), EPA SOP C-109 (ICP/AES Method)

Approval: _____

Date: _____

EA ENGINEERING
SCIENCE AND TECHNOLOGY

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U.S. Environmental Protection Agency
Region 2 Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

Data Report: VINELAND CHEMICAL

Project Number: 10040039

Program: Y206E

Project Leader: ERIKA MCCORMICK

| Remark Codes | Explanation |
|-----------------|--|
| U | THE ANALYTE WAS NOT DETECTED AT OR ABOVE THE REPORTING LIMIT. |
| J | THE IDENTIFICATION OF THE ANALYTE IS ACCEPTABLE; THE REPORTED VALUE IS AN ESTIMATE. |
| UJ | THE ANALYTE WAS NOT DETECTED AT OR ABOVE THE REPORTING LIMIT. THE REPORTING LIMIT IS AN ESTIMATE. |
| N | THERE IS PRESUMPTIVE EVIDENCE THAT THE ANALYTE IS PRESENT; THE ANALYTE IS REPORTED AS A TENTATIVE IDENTIFICATION. |
| NJ | THERE IS PRESUMPTIVE EVIDENCE THAT THE ANALYTE IS PRESENT; THE ANALYTE IS REPORTED AS A TENTATIVE IDENTIFICATION. THE REPORTED VALUE IS AN ESTIMATE. |
| R | THE PRESENCE OR ABSENCE OF THE ANALYTE CANNOT BE DETERMINED FROM THE DATA DUE TO SEVERE QUALITY CONTROL PROBLEMS. THE DATA ARE REJECTED AND CONSIDERED UNUSABLE. |
| K | THE IDENTIFICATION OF THE ANALYTE IS ACCEPTABLE; THE REPORTED VALUE MAY BE BIASED HIGH. THE ACTUAL VALUE IS EXPECTED TO BE LESS THAN THE REPORTED VALUE. |
| L | THE IDENTIFICATION OF THE ANALYTE IS ACCEPTABLE; THE REPORTED VALUE MAY BE BIASED LOW. THE ACTUAL VALUE IS EXPECTED TO BE GREATER THAN THE REPORTED VALUE. |
| NV | NOT VALIDATED |
| INC | RESULT NOT ENTERED |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

1001254

Field/Station ID: PV-S29-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 21 | | mg/Kg |

1001255

Field/Station ID: PV-DUP1
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
|-------------------|---------------------|---------------|---------------------|--------------|

1001256

Field/Station ID: PV-S26-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 340 | | mg/Kg |

1001257

Field/Station ID: PV-S26-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
|-------------------|---------------------|---------------|---------------------|--------------|



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM101339

Field/Station ID: PV-S32-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 16 | | mg/Kg |

AM101339

Field/Station ID: PV-S39-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 24 | | mg/Kg |

AM101339

Field/Station ID: PV-S39-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 6.4 | | mg/Kg |

AM101339

Field/Station ID: PV-S25-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 29 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01262

Field/Station ID: PV-S25-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 5.5 | | mg/Kg |

AM01263

Field/Station ID: PV-S40-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 30 | | mg/Kg |

AM01264

Field/Station ID: PV-S40-A-MS

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 51 | | mg/Kg |

AM01265

Field/Station ID: PV-S40-A-MSD

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 26 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AMB1266

Field/Station ID: PV-S40-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 4.2 | | mg/Kg |

AMB1267

Field/Station ID: PV-DUP2

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 4.9 | | mg/Kg |

AMB1268

Field/Station ID: PV-S38-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 9.4 | | mg/Kg |

AMB1269

Field/Station ID: PV-S30-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 20 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01270 Field/Station ID: PV-S31-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

CAS Number Analyte Name
7440-38-2 ARSENIC

Result Remark Units
40 Codes mg/Kg

AM01271 Field/Station ID: PV-S24-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

CAS Number Analyte Name
7440-38-2 ARSENIC

Result Remark Units
320 Codes mg/Kg

AM01272 Field/Station ID: PV-S41-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

CAS Number Analyte Name
7440-38-2 ARSENIC

Result Remark Units
5.4 Codes mg/Kg

AM01273 Field/Station ID: PV-S37-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

CAS Number Analyte Name
7440-38-2 ARSENIC

Result Remark Units
1.6 Codes mg/Kg



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AN00274 Field/Station ID: PV-DUP3
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 4.2 | | mg/Kg |

AN00275 Field/Station ID: PV-S42-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 4.2 | | mg/Kg |

AN00276 Field/Station ID: PV-S28-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 21 | | mg/Kg |

AN00277 Field/Station ID: PV-S28-A-MS
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 21 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01278

Field/Station ID: PV-S28-A-MSD
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> |
|---------------|
| 20 |

| <u>Remark Codes</u> |
|---------------------|
| |

| <u>Units</u> |
|--------------|
| mg/Kg |

AM01279

Field/Station ID: PV-S28-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> |
|---------------|
| 0.77 |

| <u>Remark Codes</u> |
|---------------------|
| |

| <u>Units</u> |
|--------------|
| mg/Kg |

AM01280

Field/Station ID: PV-S35-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> |
|---------------|
| 2.6 |

| <u>Remark Codes</u> |
|---------------------|
| |

| <u>Units</u> |
|--------------|
| mg/Kg |

AM01281

Field/Station ID: PV-R18-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> |
|---------------|
| 2.99 |

| <u>Remark Codes</u> |
|---------------------|
| |

| <u>Units</u> |
|--------------|
| mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM0120

Field/Station ID: PV-R18-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

—

Remark
Codes

1.5U

Units

mg/Kg

AM0120

Field/Station ID: PV-R23-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

—

Remark
Codes

0.77U

Units

mg/Kg

AM0120

Field/Station ID: PV-R23-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

—

Remark
Codes

0.81U

Units

mg/Kg

AM0120

Field/Station ID: PV-S43-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

—

Remark
Codes

0.87U

Units

mg/Kg



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01286

Field/Station ID: PV-R1-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units
mg/Kg

0.85U

AM01287

Field/Station ID: PV-S23-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units
mg/Kg

38

AM01288

Field/Station ID: PV-S23-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units
mg/Kg

10

AM01289

Field/Station ID: PV-S16-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units
mg/Kg

50



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01290 Field/Station ID: PV-R19-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 64 | | mg/Kg |

AM01291 Field/Station ID: PV-R19-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 23 | | mg/Kg |

AM01292 Field/Station ID: PV-S20-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 29 | | mg/Kg |

AM01293 Field/Station ID: PV-DUP4
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 21 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01294 Field/Station ID: PV-S20-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 4.6 | | mg/Kg |

AM01295 Field/Station ID: PV-S20-B-MS
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 5.3 | | mg/Kg |

AM01296 Field/Station ID: PV-S20-B-MSD
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 4.7 | | mg/Kg |

AM01297 Field/Station ID: PV-S13-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 820 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AN001399 Field/Station ID: PV-S13-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 230 | | mg/Kg |

AN001399 Field/Station ID: PV-S15-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 240 | | mg/Kg |

AN001399 Field/Station ID: PV-S15-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 240 | | mg/Kg |

AN001399 Field/Station ID: PV-R7-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 240 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01303 Field/Station ID: PV-R15-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 6.5 | | mg/Kg |

AM01303 Field/Station ID: PV-R8-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.6 | | mg/Kg |

AM01304 Field/Station ID: PV-R16-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.1 | | mg/Kg |

AM01305 Field/Station ID: PV-R16-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.2 | | mg/Kg |



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Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

Field/Station ID: PV-S21-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 18 | | mg/Kg |

Field/Station ID: PV-S21-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.5 | | mg/Kg |

Field/Station ID: PV-S4-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.4 | | mg/Kg |

Field/Station ID: PV-S4-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.10 | | mg/Kg |



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Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01310

Field/Station ID: PV-DUP5

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

0.97U

mg/Kg

AM01311

Field/Station ID: PV-R4-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

0.68U

mg/Kg

AM01312

Field/Station ID: PV-S22-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

270

mg/Kg

AM01313

Field/Station ID: PV-S22-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

400

mg/Kg



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Project Number: 10040039

*Sorted By Sample ID

AMB1314 Field/Station ID: PV-S27-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 110 | | mg/Kg |

AMB1315 Field/Station ID: PV-DUP6
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 11 | | mg/Kg |

AMB1316 Field/Station ID: PV-S27-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 7.0 | | mg/Kg |

AMB1317 Field/Station ID: PV-S27-B-MS
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 13 | | mg/Kg |



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Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01318

Field/Station ID: PV-S27-B-MSD
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 8.1 | | mg/Kg |

AM01319

Field/Station ID: PV-S33-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 34 | | mg/Kg |

AM01320

Field/Station ID: PV-S33-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 0.90U | mg/Kg |

AM01321

Field/Station ID: PV-R21-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 8.1 | | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AY101322

Field/Station ID: PV-S34-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 63 | | mg/Kg |

AY101323

Field/Station ID: PV-S6-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 410 | | mg/Kg |

AY101324

Field/Station ID: PV-S3-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 6.2 | | mg/Kg |

AY101325

Field/Station ID: PV-S36-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 0.770 | | mg/Kg |



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Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01326 Field/Station ID: PV-DUP7
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.1 | | mg/Kg |

AM01327 Field/Station ID: PV-S36-A-MS
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.2 | | mg/Kg |

AM01328 Field/Station ID: PV-S36-A-MSD
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 0.79U | mg/Kg |

AM01329 Field/Station ID: PV-S17-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.2 | | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AM01330

Field/Station ID: PV-S17-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 3.2 | | mg/Kg |

AM01331

Field/Station ID: PV-S19-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.46 | | mg/Kg |

AM01332

Field/Station ID: PV-R9-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.5 | | mg/Kg |

AM01333

Field/Station ID: PV-R13-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 0.96 | | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AM01334 Field/Station ID: PV-R5-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 0.92 | | mg/Kg |

AM01335 Field/Station ID: PV-R6-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.0 | | mg/Kg |

AM01336 Field/Station ID: PV-R12-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.0 | | mg/Kg |

AM01337 Field/Station ID: PV-S8-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 3.0 | | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AM01338 Field/Station ID: PV-R20-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 500 | | mg/Kg |

AM01339 Field/Station ID: PV-R22-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 1.5U | mg/Kg |

AM01340 Field/Station ID: PV-DUP8
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 1.5U | mg/Kg |

AM01341 Field/Station ID: PV-R22-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 0.77U | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AM01343

Field/Station ID: PV-R22-B-MS

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units
mg/Kg

0.77U

AM01343

Field/Station ID: PV-R22-B-MSD

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

mg/Kg

0.74U

AM01344

Field/Station ID: PV-R2-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

mg/Kg

0.94U

AM01345

Field/Station ID: PV-R14-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| CAS Number | Analyte Name |
|------------|--------------|
| 7440-38-2 | ARSENIC |

Result

Remark
Codes

Units

mg/Kg



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Project Number: 10040039

*Sorted By Sample ID

AM01346

Field/Station ID: PV-R17-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| 19 | | mg/Kg |

AM01347

Field/Station ID: PV-S1-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| 61 | | mg/Kg |

AM01348

Field/Station ID: PV-S10-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| 12 | | mg/Kg |

AM01349

Field/Station ID: PV-S12-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| 320 | | mg/Kg |



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*Sorted By Sample ID

AM01350 Field/Station ID: PV-S2-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| --- | 1.1U | mg/Kg |

AM01351 Field/Station ID: PV-S2-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| --- | 0.93U | mg/Kg |

AM01352 Field/Station ID: PV-S9-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| --- | 2.1U | mg/Kg |

AM01353 Field/Station ID: PV-S9-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|---------------|---------------------|--------------|
| --- | 0.02U | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AM01354

Field/Station ID: PV-S5-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 3.3 | | mg/Kg |

AM01355

Field/Station ID: PV-S5-B
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 0.92U | mg/Kg |

AM01356

Field/Station ID: PV-DUP9
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 0.95U | mg/Kg |

AM01357

Field/Station ID: PV-R10-A
Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.4 | | mg/Kg |



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Project Number: 10040039

*Sorted By Sample ID

AM01358 Field/Station ID: PV-R10-B
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.3 | | mg/Kg |

AM01359 Field/Station ID: PV-R10-B-MS
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | | | mg/Kg |

AM01360 Field/Station ID: PV-R10-B-MSD
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.0 | | mg/Kg |

AM01361 Field/Station ID: PV-S11-A
Matrix: Sediment
Sample Description:

Date Received: 4/19/2010

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID



Field/Station ID: PV-S11-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | — | 0.99U | mg/Kg |



Field/Station ID: PV-R3-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 8.8 | | mg/Kg |



Field/Station ID: PV-R3-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 28 | | mg/Kg |



Field/Station ID: PV-S14-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.9 | | mg/Kg |



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Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01366

Field/Station ID: PV-S14-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | --- | 0.71U | mg/Kg |

AM01367

Field/Station ID: PV-R11-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.3 | | mg/Kg |

AM01368

Field/Station ID: PV-R11-A-MS

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.2 | | mg/Kg |

AM01369

Field/Station ID: PV-R11-A-MSD

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.4 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID

AM01370

Field/Station ID: PV-R11-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.7 | | mg/Kg |

AM01371

Field/Station ID: PV-DUP10

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 1.3 | | mg/Kg |

AM01372

Field/Station ID: PV-S7-A

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 27 | | mg/Kg |

AM01373

Field/Station ID: PV-S7-B

Date Received: 4/19/2010

Matrix: Sediment

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> | <u>Result</u> | <u>Remark Codes</u> | <u>Units</u> |
|-------------------|---------------------|---------------|---------------------|--------------|
| 7440-38-2 | ARSENIC | 2.6 | | mg/Kg |



U.S. EPA Region 2 Laboratory
Data Report

Survey Name: VINELAND CHEMICAL

Project Number: 10040039

*Sorted By Sample ID



Field/Station ID: PV-S18-A

Matrix: Sediment

Date Received: 4/19/2010

Sample Description:

Single Component Analyses

| <u>CAS Number</u> | <u>Analyte Name</u> |
|-------------------|---------------------|
| 7440-38-2 | ARSENIC |

| <u>Result</u> |
|---------------|
| 42 |

| <u>Remark Codes</u> |
|---------------------|
|---------------------|

| <u>Units</u> |
|--------------|
| mg/Kg |

Project Approval: _____

Date: _____

5/21/10